THE ADEQUACY OF LOCAL ANÆSTHESIA IN INGUINAL HERNIA OPERATIONS.*

BY JOHN A. BODINE, M.D.,
OF NEW YORK,
Professor of Surgery in the New York Polyclinic Medical School.

MODERN surgery advises a patient with inguinal hernia to submit to operation for cure, and in lieu of this curative advice the patient accepts his hernia and a truss. Two or three million of ruptures in the United States rejecting this surgical advice constitutes a defeat for modern surgery in its application to the people. The surgical proposition of 90 per cent. cure, short detention from business and a small danger to life, would seem attractive for the relief of a deformity to person, 15 to 50 per cent. loss of earning capacity and a potential death, yet the number of trusses worn attests the colossal rejection of this proposition. Further curtailment of the hospital detention is impossible, new methods of closing the canal to increase permanent cures improbable, and the small danger to life is stationary in the anæsthetic. To this last particular surgery must look for improvement in the attractiveness of its proposition. General narcosis, with its small but certain danger to life and its disagreeable features presents a deterrent factor to accepting a surgical operation for the cure of hernia. If, then, we eliminate the danger, the dread and disagreeableness of general narcosis, we may turn a conspicuous surgical defeat into a colossal victory.

The absorption of cocaine into the substance of the spinal cord produces analgesia of the body below the level of the point of introduction and likewise the introduction of cocaine into the substance of any spinal nerve produces analgesia throughout the area of its distribution. Some failures to produce analgesia occur after introduction of cocaine into the spinal canal, but its

* Read before the Surgical Section of the New York Academy of Medicine, March 1, 1907.

analgesic effects invariably follow its introduction under touch and eyesight into the substance of a nerve trunk. The nerves supplying sensation to the entire area involved in the operation for cure of inguinal hernia are the ilio-inguinal, iliohypogastric and genitocrural. The peritoneal prolongation or sac is, of course, differently supplied.

In earlier operations effort was made to cocainize all three nerves mentioned, but it is unnecessary. Cocainization of the ilio-inguinal nerve alone with infiltration into certain well known sensitive areas suffices for a painless dissection. Finding and identifying this nerve is an easy matter in almost every case. In the rarest of instances has it failed to appear immediately upon reflecting the external oblique apponeurosis. In these instances the nerve had broken up into its distributing branches prior to its entrance upon the field of operation. The two other nerves, if seen during the operation, are cocainized, but no search is made. The areas supplied by them are few and well known and easily made analgesic by infiltration. The technic has been fully explained in a previous paper and will not be repeated here. If the skin and subcutaneous tissue are properly infiltrated by a 1 to 500 warm cocaine solution the incision down to and through the external oblique aponeurosis is totally devoid of pain to the patient. As a matter of fact, they frequently do not know the difference between the cocaine infiltration and the incision. It is to be remembered in explanation of the clinical report which follows, that but few blood vessels and nerve filaments are encountered in the incision to and through the external oblique, if said incision is not yet carried to or below the level of the external ring. At this latter point the ilio-inguinal nerve expands into many filaments and the bleeding points are numerous. It is, therefore, essential to find and cocainize the ilio-inguinal trunk before incision into this level. After finding and cocainizing the ilio-inguinal at the upper limit of the hernia incision, the operation in simple cases can be completed without additional analgesia and with little or no complaint of pain. Infiltration is necessary into the internal oblique around the arching fibres of the internal ring

and around the sac neck during its dissection within the margin of this opening. *It is solely upon anatomical grounds that the operation for inguinal hernia lends itself peculiarly to local anæsthesia.* The facility with which the sensory nerve supply is found and obtunded, the restricted and superficial area of operation, paucity of blood vessels, simple character of visceral handling and, above all, the likeness of one operation to another, step by step, so that the technic can be systematized. The simplest case of rectal surgery, be it hæmorrhoids, fistula or fissure, does not from anatomical or clinical reasons so justify local anæsthesia in its performance. In fact, the adequacy of local anæsthesia in hernia operations does not obtain either theoretically or clinically in the same satisfactory measure in any other operation in general surgery. Few surgeons would subject an adult patient to general narcosis for a circumcision, yet in my own experience (to eliminate the question of personal equation) a hernia is as satisfactory as a circumcision.

Suppose we study the adequacy of local anæsthesia in detail.

Pain to Patient.—As an objective index to pain, the patient is made to assume an attitude of relaxation, feet together, his fingers locked over his chest. The sudden movement of either hand or foot would be regarded as evidence of acute pain. A number of changes in this position would indicate a moderate pain continued to a point of restlessness. Not a single patient has as yet produced this evidence of either acute or moderate pain. None have grumbled or complained during the operation, while in the majority every objective evidence of pain has been absent, even in facial expression. As negative and subjective evidence of this point, in double herniæ, the patients were willing and often desirous of having the second side operated upon at one sitting; some have had the second side operated upon one, two or more days following the first, and none have expressed either dread or unwillingness for the second ordeal. To each and every one of the double cases general narcosis was offered as a test at the second operation and refused. I am satisfied that the pain is so little it can be

called painless, when compared with the nausea following ether. Where adhesions exist to the parietal peritoneum within the internal ring, pain was expressed during the separation, but so far has not been sufficient to discourage the patient or embarrass the operator. The most practical evidence on the quality and quantity of pain is the increasing number of patients seeking operation at the clinic sent by one another.

Thoroughness.—An operation, if curtailed in respect to thoroughness, would discredit the adequacy of the analgesic. As the patient is flaccid, quiet and uncomplaining, no temptation to shorten or curtail the operation is presented to the operator. Every modification of the simple Bassini has been practised, varicoceles, lipomata and cysts have been met, transference of the rectus muscle, deviation of the sac neck and placing an undescended testicle have been practised. Amputation of omentum in any quantity is shocky, but not painful.

Safety to Patients.—Safety to patient is the guiding rule for all surgeons. With a hernia the patient weighs well this feature. His familiarity with the lesion on account of frequency amongst his acquaintances invites him to consider chances of death, pain, expense and detention from business more than, for instance, interval appendicitis. That a solution of cocaine, amounting in sum total to any fractional part of a grain intermittently injected during an hour of time is less dangerous than cerebral narcosis for the same period is obvious and that it is entirely without danger to the patient is probably a fact. The subject of a hernia readily accepts this point.

There is at times a set of symptoms once regarded as toxic manifestations of cocaine, sweating, pallor and sighing. They are purely psychic and in no way toxic. The strangeness of being cut, even without pain, is responsible, and as surgery under local analgesia becomes better known to the people, these psychic phenomena will become less frequent.

Limitations.—Fat presents the principal limitation to the method. It is impossible to œdematize, and there is pain during the incision through the layer of fat; but the principal difficulty is in the necessary retraction for exposure in a wound so deep.

This limitation, however, is inoperative if the least contra-indication to general anæsthesia exists. The fat subject can be operated upon under local anæsthesia successfully, but not painlessly. Age, atheroma, lesions of kidney and heart offer no barrier. These belong to the class where general anæthesia is contra-indicated and but emphasize the utility of this method. Very large complicated herniæ are limitations in a relative sense only, because the handling of gut and omentum causes no pain if their attachments are not dragged upon. Popularization of the method would be conducive to operation while the hernia was small. This would be a great advantage. "The smaller the hernia, the more certain the cure," is a truism. This method of analgesia does not figure in the hernia of early childhood. Boys of ten years of age have twice been successfully operated upon. In strangulated hernia local analgesia rises almost to the dignity of an imperative method. The added shock of an hour under cerebral narcosis—danger from drowning in fæcal vomit and the hurried decision as to whether the loop of gut should be excised or not, accentuate the advantage of a method that does not shock, permits the patient to control the vomit and gives any quantity of time to decide on the circulation in the gut.

In one instance the gut was wrapped in hot saline cloths for over an hour, until the circulation was established beyond a doubt. Even resection of the gut is not impossible in strangulated hernia, because the loop is already out of the cavity and permits excision and suturing without dragging on the mesentery.

There is little or no pain in the division and suturing. If unconsciousness is thought best at this stage, cerebral narcosis can be temporarily added.

A case in point is Michael Keegan, October 19, 1906, Polyclinic Hospital, with strangulated hernia. The imprisoned loop was gangrenous and perforated. In fear of suffocation from the fæcal vomit, it was decided to attempt the excision under local analgesia. Clamps were applied to the bowel and 12 inches of ileum excised, the ends sutured without additional

cocaine. The patient was mentally alert and acutely perceptive. The possibility of excision of the bowel obtains only in strangulated hernia and not when any manipulation *within* the peritoneal cavity is needed.

Meltzer, of this city, has lately made a statement on experimental evidence that the introduction of cocaine into the circulation at any point in the body reduces sensation in the gut. Possibly here is the explanation. Certain advantages are inherently associated with local analgesia. It imposes upon the surgeon respect for tissues, gentleness of manipulation amounting to daintiness.

Blunt dissection, tearing or rubbing the sac from the cord with gauze pads is impossible. The number of times the wound is swabbed is economized and all this is as it should be for the welfare of the wound. Clean-cut dissection is necessary from beginning to end. The signal advantage of this method is the preservation of the structural integrity of the nerves in this area. They are sought, not only to be cocainized, but to be preserved from injury. Division or other injury to these nerves has probably been the rule rather than the exception during operations for hernia. No text-book or monograph on this subject bespeak them respect or preservation. Thinning, atrophy and paralysis follow division of a nerve trunk as an inexorable law, and must, to a greater or less extent, follow injury to the ilio-inguinal or hypogastric nerves. The structures supplied are the very ones relied upon to close the canal and make permanent the cure. Thinning or atrophy must invite recurrence. So important does this appear that it seems strange emphasis has not been laid upon it heretofore.

Nausea and vomiting following ether may or may not jeopardize the integrity of the deep stitches, but its absence under local analgesia is both grateful to the patient and a safety to the wound. If the application of this method were peculiarly within the ability and skill of a few operators and not the common property of all surgeons, it would be of little or no value to surgery.

Each member in the clinic, each and every succeeding

house surgeon in the hospital for the past three or four years, together with numerous students throughout the country, have adopted the method and perform the operation with entire satisfaction to themselves and to the patient.

Recurrences.—The recurrences have not been computed, but it would seem a reasonable hope that preservation of the nerves innervating the structures upon which permanency of cure depends would prove a practical as well as a theoretical conclusion. This much can be said, the percentage of recurrences of one operator under local analgesia will be that same operator's percentage of recurrences under cerebral narcosis.

A personal experience of over four hundred operations for radical cure of inguinal hernia with local cocain analgesia forms the basis of the foregoing remarks. Since the first operation of this series, no case of inguinal hernia has been operated upon under any other kind or method of analgesia.

Consequently, the experience embraces nearly all variations of the simple hernial protrusion and nearly, if not all, the different types of patients.

It is the conclusion of this paper that local analgesia is entirely adequate for the radical cure of inguinal hernia.